AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please amend claims 1, 11, 14, 16, 20, 26, 51, 66, and 68 – 70, inclusive, and cancel claim 23, with claims 3 – 9, 15, 17, 19, 21 – 22, 24 – 25, 27, 29, 32 – 33, 35, 40 – 43, 45 – 46, 48 – 50, 52 – 59, and 63 – 65 having been cancelled previously, as follows:

1 (Currently Amended). An apparatus, comprising:

a reference resonator to provide a first signal having a resonant frequency;

an amplifier coupled to the reference resonator;

<u>a voltage isolator coupled to the reference resonator and comprising a current mirror having a cascode configuration to substantially isolate the reference resonator from a voltage variation;</u> and

a frequency controller coupled to the reference resonator, the frequency controller to maintain the resonant frequency substantially constant at a selected first frequency of a plurality of frequencies, the frequency controller comprising:

a coefficient register to store a first plurality of coefficients; and

a first array having a plurality of capacitive modules.

2 (Previously Presented). The apparatus of claim 1, further comprising:

a frequency divider coupled to the resonator, the frequency divider to divide the first signal having the first frequency into a second signal having a second frequency substantially equal to or lower than the first frequency.

3 – 9 (Cancelled).

10 (Previously Presented). The apparatus of claim 2, wherein the frequency divider comprises a square-wave generator to convert the first signal into a substantially square-wave signal having a substantially equal high and low duty cycle.

11 (Currently Amended). The apparatus of claim 2, wherein the frequency divider further is ~~is further configured~~ to generate a plurality of second signals, and the apparatus further comprising:

a frequency selector coupled to the frequency divider, the frequency selector ~~configured~~ to provide an output signal from the plurality of second signals.

12 (Original). The apparatus of claim 11, wherein the frequency selector comprises a multiplexer and a glitch-suppressor.

13 (Previously Presented). The apparatus of claim 11, further comprising:

a mode selector coupled to the frequency selector, the mode selector to provide a plurality of operating modes, the plurality of operating modes selected from a group comprising a clock mode, a timing and frequency reference mode, a power conservation mode, and a pulse mode.

14 (Currently Amended). The apparatus of claim 13, further comprising:

a synchronization circuit coupled to the mode selector; and

a controlled oscillator coupled to the synchronization circuit to provide a third signal;

wherein in the timing and reference mode, the mode selector further is ~~is further configured~~ to couple the output signal to the synchronization circuit to control timing and frequency of the third signal.

15 (Cancelled).

16 (Currently Amended). The apparatus of claim 1, wherein the amplifier further comprises a negative transconductance amplifier and wherein the frequency controller further is ~~is further configured~~ to modify a current through the negative transconductance amplifier in response to temperature.

17 (Cancelled).

18 (Previously Presented). The apparatus of claim 16, wherein the frequency controller further comprises a current source responsive to temperature and wherein the current source has one or more configurations selected from a plurality of configurations, the plurality of configurations comprising CTAT, PTAT, and $PTAT^2$ configurations.

19 (Cancelled).

20 (Currently Amended). The apparatus of claim 16, wherein the frequency controller further is ~~is further configured~~ to modify a current through the negative transconductance amplifier or modify a transconductance of the negative transconductance amplifier to maintain the resonant frequency substantially constant or in response to a voltage.

21 – 25 (Cancelled).

26 (Currently Amended). The apparatus of claim 1, wherein the frequency controller further is ~~is further configured~~ to modify a capacitance or an inductance of the resonator in response to temperature variation.

27 (Cancelled).

28 (Previously Presented). The apparatus of claim 1, wherein each capacitive module comprises a fixed capacitance or a variable capacitance, and wherein each capacitive module is responsive to a corresponding coefficient of the first plurality of coefficients to modify a total capacitance of the reference resonator.

29 (Cancelled).

30 (Previously Presented). The apparatus of claim 28, wherein the frequency controller further comprises:

a second array having a plurality of switchable resistive modules coupled to the coefficient register and further having a capacitive module, the capacitive module and the plurality of switchable resistive modules further coupled to a node to provide a control voltage, each switchable resistive module responsive to a corresponding coefficient of a second plurality of coefficients stored in the coefficient register to switch the switchable resistive module to the control voltage node; and

a temperature-dependent current source coupled through a current mirror to the second array.

31 (Previously Presented). The apparatus of claim 1, wherein the frequency controller further comprises:

a process variation compensator, the process variation compensator coupled to the resonator and to calibrate the resonant frequency in response to at least one coefficient of a plurality of coefficients, and wherein the process variation compensator further comprises:

a coefficient register to store the plurality of coefficients; and

an array having a plurality of switchable capacitive modules coupled to the coefficient register and to the resonator, each switchable capacitive module having a first fixed capacitance and a second fixed capacitance, each switchable capacitive module responsive to a corresponding coefficient of the plurality of coefficients to switch between the first fixed capacitance and the second fixed capacitance.

32 - 33 (Cancelled).

34 (Previously Presented). The apparatus of claim 31, wherein the process variation compensator further comprises:

an array having a plurality of switchable variable capacitive modules coupled to the coefficient register and to the resonator, each switchable variable capacitive module responsive to a corresponding coefficient of the plurality of coefficients to switch between a first voltage and a second voltage.

35 (Cancelled).

36 (Previously Presented). The apparatus of claim 31, wherein the process variation compensator further comprises:

an array having a plurality of switchable capacitive modules coupled to the coefficient register and to the resonator, each switchable capacitive module having a fixed capacitance and a fuse, each switchable capacitive module responsive to a corresponding coefficient of the plurality of coefficients to open circuit the fuse.

37 (Previously Presented). The apparatus of claim 1, further comprising:

a frequency calibration module coupled to the frequency controller, the frequency calibration module to modify the resonant frequency in response to a reference signal.

38 (Previously Presented). The apparatus of claim 37, wherein the frequency calibration module comprises:

a frequency divider coupled to the frequency controller, the frequency divider to convert an output signal derived from the first signal having the first frequency to a lower frequency to provide a divided signal;

a frequency detector coupled to the frequency divider, the frequency detector to compare the reference signal to the divided signal and provide one or more up signals or down signals; and

a pulse counter coupled to the frequency detector, the pulse counter to determine a difference between the one or more up signals or down signals as an indicator of a difference between the output signal and the reference signal.

39 (Previously Presented). The apparatus of claim 1, wherein the resonator comprises an inductor (L) and a capacitor (C) coupled to form an LC-tank, the LC-tank having a selected configuration of a plurality of LC-tank configurations; or wherein the resonator is selected from a group comprising: a ceramic resonator, a mechanical resonator, a microelectromechanical resonator, and a film bulk acoustic resonator

40 – 43 (Cancelled).

44 (Original). The apparatus of claim 1, wherein the frequency controller further comprises:

a temperature compensator coupled to the amplifier;

a voltage isolator coupled to the resonator; and

a process variation compensator coupled to the resonator.

45 - 46 (Cancelled).

47 (Previously Presented). The apparatus of claim 1, further comprising:

a second oscillator providing a second oscillator output signal; and

a mode selector coupled to the frequency controller and to the second oscillator, the mode selector to switch to the second oscillator output signal to provide a power conservation mode or to periodically start and stop the resonator to provide a pulsed output signal.

48 – 50 (Cancelled).

51 (Currently Amended). An apparatus, comprising:

a reference resonator to provide a first signal having a resonant frequency;

an amplifier coupled to the reference resonator;

a temperature compensator coupled to the amplifier and to the reference resonator, the temperature compensator to maintain the resonant frequency of the reference resonator substantially constant in response to temperature;

a process variation compensator coupled to the reference resonator, the process variation compensator to calibrate the resonant frequency;

a frequency divider coupled to the reference resonator, the frequency divider to divide the first signal having the resonant frequency into a second signal having a second frequency substantially equal to or lower than the resonant frequency; and

a voltage isolator coupled to the reference resonator and comprising a current mirror having a cascode configuration to substantially isolate the reference resonator from a voltage variation.

52 – 59 (Cancelled).

60 (Previously Presented). The apparatus of claim 51, wherein the temperature compensator further comprises:

a coefficient register to store a first plurality of coefficients and a second plurality of coefficients;

a first array having a plurality of binary-weighted switchable capacitance branches coupled to the coefficient register and to the resonator, each switchable capacitance branch having a fixed capacitance and a variable capacitance and responsive to a corresponding coefficient of the first plurality of coefficients to switch between the fixed capacitance and the variable capacitance and to switch the variable capacitance to a control voltage node;

a second array coupled to the control voltage node, the second array having a plurality of switchable resistances coupled to the coefficient register and further having a fixed capacitance, each switchable resistive module responsive to a corresponding coefficient of the second plurality of coefficients to switch the switchable resistive module to the control voltage node; and

a temperature-dependent current source coupled through a current mirror to the second array.

61 (Previously Presented). The apparatus of claim 51, wherein the process variation compensator further comprises:

a coefficient register to store a plurality of coefficients;

an array having a plurality of binary-weighted, switchable capacitive modules coupled to the coefficient register and to the resonator, each switchable capacitive module having a first fixed capacitance and a second fixed capacitance, each switchable capacitive module responsive to a corresponding coefficient of the plurality of coefficients to switch between the first fixed capacitance and the second fixed capacitance; and

a frequency calibration module to generate the plurality of coefficients in response to a reference signal.

62 (Previously Presented). The apparatus of claim 51, wherein the process variation compensator further comprises:

a coefficient register to store a plurality of coefficients;

an array having a plurality of binary-weighted, switchable variable capacitive modules coupled to the coefficient register and to the resonator, each switchable variable capacitive module responsive to a corresponding coefficient of the plurality of coefficients to switch between a first voltage and a second voltage; and

a frequency calibration module to generate the plurality of coefficients in response to a reference signal.

63 – 65 (Cancelled).

66 (Currently Amended). A method of generating a reference signal, the method comprising:

using a free-running, reference oscillator, generating a resonant signal having a resonant frequency;

maintaining the resonant frequency of the reference oscillator substantially constant in response to temperature;

dividing the resonant signal having the resonant frequency into a second signal having a second frequency substantially equal to or lower than the resonant frequency;

isolating the reference resonator from a substantial voltage variation; and

selecting an operating mode from a plurality of operating modes, the plurality of operating modes comprising a clock mode and a power conservation mode.

67 (Original). The method of claim 66, wherein the resonant signal is a differential, substantially sinusoidal signal, and wherein the method further comprises:

converting the differential, substantially sinusoidal signal to a single-ended, substantially square wave signal having a substantially equal high and low duty cycle.

68 (Currently Amended). The method of claim 66, wherein the plurality of operating modes further comprise a timing and frequency reference mode and a pulse mode. ~~further comprising:~~

~~selecting an operating mode from a plurality of operating modes, the plurality of operating modes selected from a group comprising a clock mode, a timing and frequency reference mode, a power conservation mode, and a pulse mode.~~

69 (Currently Amended). The method of claim 66, further comprising:

synchronizing a third signal in response to the second ~~output~~ signal.

70 (Currently Amended). An apparatus for generating a clock signal, the apparatus comprising:

a reference LC resonator to provide a differential, substantially sinusoidal first signal having a resonant frequency, the reference LC resonator comprising an inductor and a capacitor;

an amplifier coupled to the reference LC resonator;

a temperature compensator coupled to the amplifier and to the reference LC resonator, the temperature compensator to modify a capacitance of the reference LC resonator in response to temperature;

a process variation compensator coupled to the reference LC resonator, the process variation compensator to modify the capacitance of the LC resonator for frequency calibration;

a voltage isolator coupled to the reference LC resonator and comprising a current mirror having a cascode configuration to substantially isolate the reference LC resonator from a voltage variation; and

a frequency divider coupled to the reference LC resonator, the frequency divider to convert the first signal having the resonant frequency into a differential or single-ended, substantially square-wave second signal having a second frequency substantially equal to or lower than the resonant frequency and having a substantially equal high and low duty cycle.